

DECISION RECORD

Environmental Assessment No. NM-060-99-079
Section 3 Grazing Authorization
Allotment 65024

It is my decision to issue a ten-year permit to Willard and Donna Moody to graze cattle on Allotment 65024 based on Alternative B (Modified Livestock Management) in Environmental Assessment NM-060-99-079 (EA). Permitted use will be for 100 animal units, which corresponds to 804 animal unit months. Cattle will be distributed yearlong among the pastures at 67 percent federal range.

A cooperative management plan (CMP) will be developed by the BLM and the permittee to include seasonal use of the Pecos River riparian area. The plan will be initiated upon issuance of the permit and will be completed within two years. The plan will include rangeland health objectives which reflect floodplain, riparian, and wildlife concerns.

Specific projects and activities will be developed in the CMP through consultation, coordination, and cooperation between the BLM and the permittee. An environmental assessment will be prepared for the plan. Following implementation of the CMP, changes could be proposed by any participant, and the plan could be amended or supplemented by mutual agreement.

In accordance with 43 CFR §4160, a period of 15 days is allowed following receipt of this proposed decision to protest it to the Authorized Officer in person or in writing. Points of protest should be specific. In the absence of a protest, this proposed decision will become the final decision of the Authorized Officer without further notice.

In accordance with 43 CFR §4.470, a period of 30 days is allowed following the date of the final decision to file an appeal and petition for a stay of the decision for the purpose of a hearing before an Administrative Law Judge. The specific points being appealed should be clearly and concisely stated. Appeals can be filed at the following address:

Field Office Manager
Bureau of Land Management
Roswell Field Office
2909 West Second Street
Roswell, New Mexico 88201

signed by T. R. Kreager
Assistant Field Manager - Resources

8/16/99
Date

ENVIRONMENTAL ASSESSMENT

for

Section 3

GRAZING AUTHORIZATION

on

ALLOTMENT 65024

**Township 7 South, Range 26 East
Sections 31 - 33 (part)**

**Township 8 South, Range 25 East
Section 1, 11 - 14 (part)**

**Township 8 South, Range 26 East
Sections 4 - 9 (all or part)**

EA-NM-060-99-079

March 1999

**U.S. Department of the Interior
Bureau of Land Management
Roswell Field Office
Roswell, New Mexico**

I. BACKGROUND

A. Introduction

When authorizing livestock grazing on public range, the Bureau of Land Management (BLM) has historically relied on a land use plan and environmental impact statement to comply with the National Environmental Policy Act (NEPA). A recent decision by the Interior Board of Land Appeals, however, affirmed that the BLM must conduct a site-specific NEPA analysis before issuing a permit to authorize livestock grazing. This environmental assessment fulfills the NEPA requirement by providing the necessary site-specific analysis of the effects of issuing a new grazing permit on Allotment 65024.

The scope of this environmental assessment is limited to the effects of issuing a new grazing permit on Allotment 65024. Over time, the need could arise for subsequent management activities which relate to grazing authorization. These activities could include vegetation treatments (e.g., prescribed fires, herbicide projects), range improvement projects (e.g., fences, water developments), and others. Future rangeland management actions related to livestock grazing would be addressed in project-specific NEPA documents as they are proposed.

Though this environmental assessment specifically addresses the impacts of issuing a grazing permit on Allotment 65024, it does so within the context of overall BLM management goals. Allotment management activities would have to be coordinated with projects intended to achieve those other goals. For example, a vegetation treatment designed to enhance watershed condition or wildlife habitat may require rest from livestock grazing for one or more growing seasons. Requirements of this type would be written into the permit as terms and conditions.

B. Purpose And Need For The Proposed Action

The purpose of issuing a new grazing permit would be to authorize livestock grazing on public range on Allotment 65024. The permit would be needed to specify the types and levels of use authorized, and the terms and conditions of the authorization pursuant to 43 CFR §§4130.3, 4130.3-1, 4130.3-2, and 4180.1.

C. Conformance With Land Use Planning

The proposed action conforms with the Roswell Approved Resource Management Plan (RMP) and Record of Decision (BLM 1997) as required by 43 CFR 1610.5-3.

D. Relationships to Statutes, Regulations, or Other Plans

The proposed action and alternatives are consistent with the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1700 et seq.); the Taylor Grazing Act of 1934 (43 U.S.C. 315 et seq.), as amended; the Clean Water Act (33 U.S.C. 1251 et seq.), as amended; the Endangered Species Act (16 U.S.C. 1535 et seq.) as amended; the Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et seq.); Executive Order 11988,

Floodplain Management; and Executive Order 11990, Protection of Wetlands.

II. PROPOSED ACTION AND ALTERNATIVES

A. Proposed Action - Current Livestock Management

The proposed action is to issue Willard and Donna Moody a ten-year permit to graze cattle on Allotment 65024. Permitted use would be based on a 1996 livestock use agreement that authorizes grazing of 100 animal units (AUs), which corresponds to 804 animal unit months (AUMs).¹ Total permitted use includes 100 AUs (804 AUMs) for cattle distributed yearlong among the pastures at 67 percent public range.

There would be basically no change from current livestock management as conducted by the permittee, or to existing range improvements already in place. Future projects or activities identified by the permittee or the BLM can still be considered for implementation. Rangeland monitoring would continue on the allotment and changes to livestock management would be made as necessary. If new information surfaces that livestock grazing is negatively impacting other resources, action will be taken to mitigate those impacts.

B. BLM Preferred Alternative - Modified Livestock Management Alternative

Permitted use would be the same as described under the Proposed Action. Livestock management would generally be left to the discretion of the permittee, except for the following changes which address riparian area management.

Alternative B focuses on the health of the Pecos River floodplain and viable springs and associated riparian and aquatic habitat as part of the overall rangeland health considerations for the allotment. This alternative would incorporate the following terms and conditions into the permit:

Cooperatively develop and implement an allotment management plan (AMP) to include seasonal use of the riparian area along the Pecos River. Initiation of the plan would begin upon issuance of the permit. The plan would include rangeland health objectives which reflect floodplain, riparian and wildlife habitat concerns. The AMP would be completed within two years.

Following implementation of the AMP, changes could be proposed by any participant of the plan. Through consultation, coordination, and cooperation among participants, the plan could be amended or supplemented by mutual agreement.

¹ For a cattle operation, an animal unit (AU) is defined as one cow with a nursing calf or its equivalent. An animal unit month (AUM) is the amount of forage needed to sustain that cow and calf for one month.

The plan would consider the following types of projects:

- Constructing of new fences
- Constructing additional livestock waters
- Conducting vegetation treatments
- Establishing of additional monitoring sites
- Implementing a grazing system

Specific projects and activities would be developed in the plan in coordination and cooperation with the permittee. An environmental assessment would be developed for the plan.

C. No Grazing Alternative

Under this alternative a new grazing permit would not be issued for Allotment 65024. No grazing would be authorized on federal land on this allotment under this alternative.

III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

A. General Setting

Allotment 65024 is in Chaves County, 14 miles northeast of Roswell. The Pecos River flows north-to-south through a broad alluvial valley on the western portion of the allotment. Eightmile Draw is the major drainage dissecting high terraces to the east. Elevations range from 3540 feet at the downstream end of the river to 3780 feet on the uplands to the east.

The climate is semi-arid with normal annual temperatures ranging from 20°F to 95°F at Bitter Lake National Wildlife Refuge (Kunkel 1984). Observed minimum and maximum temperatures were -22°F and 113°F, respectively. Average annual precipitation is 11.6 inches, primarily as rainfall (Owenby et al. 1992). Annual precipitation has ranged from 3.11 inches to 21.08 inches (Kunkel 1984).

Allotment 65024 is considered a riparian allotment because of its 1.4 miles of riparian habitat along the Pecos River, all of which are on public land. Riparian-wetland areas are directly influenced by permanent free water, whether at the surface or in the subsurface. Compared to adjacent upland sites, the riparian area has a greater amount and diversity of vegetation. The diversity of plant species and availability of water makes riparian areas prime wildlife habitat. Though the riparian areas along the river have tremendous resource values, they have been altered by the regulation of river flows by upstream reservoirs, especially Lake Sumner. Durkin et al. (1994) point out that the lack of high flows and channel entrenchment have led to significant changes to the extent, character, and condition of the riparian/wetland community. The U.S. Fish and Wildlife Service (1997) also has found the alteration of flow patterns to be a principal threat to the Pecos bluntnose shiner.

Reservoir releases are controlled by the Bureau of Reclamation, and are largely driven by

irrigation demands. Management of riparian areas on the allotment by the BLM and the permittee will be within the constraints imposed by the regulation of river flows.

Public lands on the allotment provide benefits for other users, as well as the permittee. These uses include recreation (e.g., hunting and wildlife viewing), and development of the Abo Gas Field.

B. Affected Resources

The following resources or values are not present or would not be affected by the authorization of livestock grazing on Allotment 65024: Areas of Critical Environmental Concern, Cultural Resources, Native American Religious Concerns, Prime or Unique Farmland, Minority/Low Income Populations, Hazardous or Solid Wastes, Wild and Scenic Rivers, and Wilderness. Affected resources and the impacts resulting from livestock grazing are described below.

1. Livestock Management

Affected Environment

In the past, the allotment has been permitted to be grazed yearlong by cattle. The permit authorized 100 AUs, and stated that grazing will be in accordance with a 1996 Rangeland Agreement. Grazing is by a cow/calf operation. The BLM controls livestock numbers on the entire allotment.

The allotment consists of four pastures ranging from 315 acres to 1700 acres in size (see map and Table 1). The allotment includes approximately 3610 acres of federal land, 570 acres of state land, and 1045 acres of private land, of which 120 acres is uncontrolled by the permittee (i.e., not owned by the permittee, but not fenced apart from the allotment). The public range is well-blocked within the allotment, having the largest blocks in South and River Pastures. River Pasture contains one continuous reach of public land along the Pecos River.

Table 1. Summary of Allotment Pastures		
Pasture Name	Acres	Pasture Description
Eightmile	1700	Uplands; Eightmile Draw; mixed BLM, private and state land
South	1600	Uplands; well-blocked BLM land
River	1610	Pecos River and bottomland to the east; predominantly BLM land along river; some uplands
Farm	315	Comprised of a bottomland pasture and fallow field; predominantly private land, with BLM land in the bottomland pasture
Allotment Total	5,225	The general topography is rolling uplands grading into breaks east of the river, the floodplain, and the Pecos River.

The allotment was placed in the "I" Category in 1981 based on rangeland monitoring studies established by the BLM. Generally, an I-category designation indicated that improvement is needed because the allotment: (1) has a potentially significant resource conflict, (2) has high potential for improvement in forage production and is in less than satisfactory condition, or (3) is in less than satisfactory condition and in a static or declining range trend.

Data collected from 1984 through 1995 indicate that ecological condition has a static trend of 46 for the bottomlands and an upward trend from 11 to 43 for the uplands (BLM 1998). The allotment would remain in the I-category to allow for potential range and wildlife projects in the future, and to acknowledge riparian-wetland resource concerns.

Prior to 1984, the allotment lacked interior fences needed for livestock rotation or deferment of grazing. In addition, there was lack of water distribution, and livestock were not evenly distributed over the ranch. The ranch was also heavily infested with mesquite. A Cooperative Management Plan was developed in 1985 to address these rangeland management concerns. Several range improvements have been constructed on public lands by the BLM since 1987, including the establishment of River, South, and Eightmile Pastures through fence construction. Current range improvement projects for the management of livestock include earthen tanks, wells, several drinking troughs with associated pipelines, pasture and boundary fences, and corrals.

No historical spring are located on the allotment based on USGS topographic maps, although Eightmile Draw has spring discharge at several points within the draw bottom. Sources are not located within the allotment boundary, but only a few hundred yards above the boundary fence. Use of this water source by livestock in Eightmile Pasture is not crucial because other developed waters exist in the pasture.

Past BLM-initiated vegetation projects include chemical treatment of about 1400 acres of mesquite in South Pasture in 1988, and a 700-acre prescribed fire on the bottomlands in River Pasture in 1996. The effect of the mesquite control is evident from an increase in ecological condition rating from 11 to 43. The effect of the prescribed fire to invigorate sacaton grasses, and control mesquite and saltcedar encroachment was initially dramatic. Additional rotational burns may be necessary to maintain bottomland grasses and effectively reduce saltcedar and mesquite.

Goldenrod, a poisonous plant to cattle during the dormant season (frost to greenup), is found in scattered areas in the bottomlands, but is concentrated on the fallow fields in Farm Pasture. Typically, livestock operators will remove cattle from goldenrod pastures during this time of year to prevent poisoning. This is the case with Farm Pasture. Eightmile Pasture has goldenrod in the bottomlands but is used in the winter.

The allotment is grazed yearlong using a two-herd rotation system comprised of herefords and brahma crosses. Generally, one herd of about 60 head is rotated through River, South, and Eightmile Pastures.

River Pasture is a very productive bottomland pasture and is grazed about six months out

of the year. Cattle are moved into River Pasture after branding in June, and kept there until November. When in River Pasture, livestock use the upland sites, but naturally congregate in the bottomlands because of the availability of forage, water, and shade. Livestock depend heavily on the Pecos River as a water source, which is considered a base water for the allotment.

South Pasture is included in the rest rotation and is grazed for initially for five months in the fall, and then for a short period in the spring (14 - 30 days). South Pasture is

scheduled to include a one-year rest period when conditions are good for grass growth and seed set.

Eightmile Pasture is a productive upland pasture that is grazed lightly during the summer months and grazed three to four months during the winter. Livestock use in Eightmile Pasture is closely watched during periods of drought. During these periods, the River Pasture provides forage when it is unavailable in the uplands. Eightmile Pasture is scheduled to include a one-year rest period as well, and was rested for one year during 1996.

A second herd of about 30 - 40 head (dry cows) is rotated between the two small paddocks that make up Farm Pasture (a bottomland and fallow field pasture). Cattle are moved onto the private land in Farm Pasture in the spring, and then moved to the bottomland pasture. Cattle may be moved to Eightmile Pasture instead, depending on forage availability. The permittee does not cultivate or irrigate the farmlands. A well previously used to irrigate the pastures is now tied to livestock watering facilities.

Water gaps and drops that span the Pecos River prevent cattle from moving off the allotment by trailing along, or within, the river channel. However, cattle may move on or off the allotment during periods when gaps are down due to flooding events. The water gaps are easily maintained due to the iron standpipe and cable construction at the allotment boundary.

Environmental Impacts

Under the Proposed Action, livestock would continue to graze public lands within the allotment. Existing pasture configurations and water developments would remain the same. Livestock management would still follow the two-herd rest rotation system.

Under Alternative B, livestock would continue to graze a majority of public lands within the allotment. A rest period or deferment, to be defined in the AMP, would be implemented for River Pasture, depending on precipitation and vegetation condition. This could cause additional grazing pressure on other pastures (livestock numbers and duration) during the rest period for River Pasture. Livestock could be deferred for a growing season or longer in pastures that receive vegetative treatments. Rangeland monitoring would become more intense and would include additional vegetation monitoring, actual use figures, and precipitation information.

Under Alternative C, there would be no livestock grazing authorized on public lands. The public lands would have to be fenced apart from the private lands or livestock would be considered in trespass if found grazing on public lands (43 CFR 4140.1(b)(1)). The expense of fencing would be borne by the private landowner. Range improvements on public land would not be maintained.

Cumulative impacts of the grazing and no grazing alternatives were analyzed in *Rangeland Reform '94 Draft Environmental Impact Statement (BLM and USDA Forest Service 1994)* and in the *Roswell Resource Area Draft RMP/EIS (BLM 1994)*. The no livestock grazing alternative was not selected in either document.

2. Vegetation

Affected Environment

Allotment 65024 is comprised of several vegetation community types arranged in a mosaic over the allotment: (1) Grassland; (2) Mixed Desert Shrub; (3) Drainages, Draws and Canyons (DDC); and (4) Riparian/Wetland. The allotment is characterized as a riparian allotment because of its proximity to the Pecos River. Riparian vegetation, primarily found within the floodplain of the river, is discussed in the Riparian/Wetland section of this environmental assessment.

Grasslands are intermixed with all community types. Sand dropseed, three-awn, black grama, bush muhly and fluffgrass are common in the sandy uplands. Alkali sacaton is the dominant species in the bottomlands where it is interspersed with saltcedar. Tobosa is found in both sandy uplands and bottomlands. Grassland sites also have a mesquite or broom snakeweed shrub component. Blue grama is primarily found on loamy soils and black grama on more gravelly soils. Gyp grama is common on the gypsiferous soil types found along Eightmile Draw.

Grassland communities on the uplands and shallow breaks above the bottomland support a large percentage of shrub species. Mesquite, broom snakeweed, fourwing saltbush, and yucca are common shrub species. The primary grasses are sand dropseed and bush muhly. Before chemical treatment, South Pasture was primarily mesquite hummocks with little grass present. Post-treatment surveys indicate an increase in bush muhly, sand dropseed, vine mesquite and black grama. Fourwing saltbush also increased in the pasture following treatment.

The Mixed Desert Shrub community is found primarily on the rough breaks with gypsiferous soils above the bottomlands. This community type also supports a larger percentage of shrub species than the other types, including pockets of creosote and javelina bush. Gyp grama and tobosa are interspersed with the shrubs.

The DDC Community is comprised of the major drainages crossing the allotment, including Eightmile Draw which is the largest drainage. Vegetation lining the banks of this well-defined draw includes saltcedar, alkali sacaton, inland saltgrass, desert willow, goldenrod, and sedges.

Rangeland monitoring studies have been established in two key areas within the allotment. The first area is situated in a bottomland grassland (Salty Bottomland SD-3 rangesite) and the second in an upland grassland (Sandy SD-3 rangesite). These permanent sites are used to track vegetation changes and to determine proper stocking rates. Soil Conservation Service range site descriptions, used in conjunction with range monitoring data collected by the BLM, serve as the basis for range trend analysis and ecological condition ratings. Range study sites contain alkali sacaton and tobosa, or sand dropseed, blue and black grama, which are the key species for range condition determinations.

Trend and ecological condition are determined from monitoring data collected every five years. Information about actual use is provided by the allottee, and includes the number of cattle, period, and pastures grazed. Utilization, production, and climatic studies are conducted by BLM specialists. Range condition for the pastures in 1995 are shown in Table 2.

Table 2. 1995 Range Condition By Pasture	
Pasture	Rating²
River (#1)	45
Eightmile (#2)	40

The ratings were determined prior to the development of additional pastures as previously described under Livestock Management. Additional monitoring sites are needed for the new pastures and Mixed Desert Shrub community type. Refer to the Soils section for additional information on range sites.

General objectives or guidelines for each vegetation community (except for riparian/wetlands) are described in the Roswell Approved RMP and Record of Decision (BLM 1997) and the Roswell Draft RMP/EIS (BLM 1994). Table 3 summarizes the general vegetation resource objectives and monitoring data averages from 1982 to 1992.

Table 3. General Vegetative Community Objectives (Monitoring Data Averages from 1984-95)				
Component	Grassland		Drainages-Draws-Canyons	
	Percent Cover	Vegetative Cover by Percent Composition	Percent Cover	Vegetative Cover by Percent Composition

² The rating is the percentage of the plant community that is climax for the range site at the time of monitoring.

Grasses	15 - 52 (15)	30 - 85 (66)	15 - 45 (48)	--
Forbs		10 - 15 (<1)		--
Shrubs	3 - 12 (6)	1 - 10 (33)	3 - 20 (1)	--
Trees		--		--
Bare Ground	14 - 60 (66)	--	0 - 60 (18)	--
Small/Large Rock	0 - 30 (0)	--	0 - 40 (0)	--
Litter	8 - 44 (13)	--	4 - 43 (33)	--

Environmental Impacts

Under the Proposed Action, grassland vegetation would continue to be grazed and trampled by livestock in all pastures, primarily the key grass species in each range site. Growing season impacts to bottomland plant species would occur each year in River Pasture and a portion of Farm Pasture.

The Mixed Desert Shrub vegetation community found in portions of Eightmile, South, and River Pastures would reflect slight vegetation use because primary forage species are not well represented in these drier areas, and livestock will not concentrate on steeper slopes.

Upland sites would reflect a static ecological condition trend at the existing permit level. Some grassland areas in South and River Pastures would remain static due to the high composition of mesquite. In the long term, upland vegetation would continue to improve in all pastures from the implementation of a rest-rotation system.

Range monitoring data indicate that the vegetation is sustainable to meet multiple resource requirements and forage at the permitted use level under the Proposed Action and Alternative B. Data in Table 3 indicate that livestock grazing is compatible with vegetation cover and composition objectives. In addition to the upward trend in ecological condition, monitoring data show the vegetative resources have been improved and sustained since monitoring began in 1984.

Under Alternative B, bottomland and riparian vegetation in River Pasture would improve with a prescribed rest period. Improvement to riparian vegetation would be tempered by the high composition of saltcedar until saltcedar control measures are implemented. A long-term upward trend in ecological condition for all community types is expected from continued implementation of a rotation system and seasonal use of the riparian area, in conjunction with proposed range improvement projects.

Under Alternative C, no impacts to vegetation resources would occur on public lands from

authorized livestock grazing. Vegetation cover would increase over the long term in some areas. Grasslands in the uplands would increase in cover and composition, but composition would be tempered by mesquite somewhat dominating the shrub component. Alkali sacaton in the bottomlands would, in the short term, increase in cover and composition but would then taper off in the long term, becoming decadent from the lack of standing vegetation removal by grazing. Alkali sacaton composition would also be tempered by saltcedar dominating certain areas of the bottomlands.

3. Soils

Affected Environment

The *Soil Survey of Chaves County, New Mexico, Northern Part (USDA Soil Conservation Service 1983)* was used to describe and analyze impacts to soils on Allotment 65024. There are five soil map units represented on the allotment:

Ustifluvents, frequently flooded, nearly level (USA) is found along the Pecos River on the west boundary of the allotment.

Glendale-Harkey association (GHA) is found on bottomlands within the 100-year floodplain of the river, in Farm Pasture, and the west part of River Pasture.

Hollomex-Gypsum land-Alama, dry complex, moderately steep (HKD) is found on terrace fronts and dissected terraces just above the 100-year floodplain. It is in the west parts of Eightmile and South Pastures, and the east part of River Pasture.

Pajarito-Bluepoint complex, hummocky (PBB) is found on alluvial side slopes in the south part of Eightmile Pasture, the east part of River Pasture, and most of South Pasture.

Hollomex-Reeves-Milner, dry loams, gently undulating (HRM) is found on terraces above the floodplain, in the northeast part of Eightmile Pasture.

Most of the soils on the allotment are derived from calcareous alluvium, residuum, or eolian deposits. They are deep, well-drained, loam soils. Runoff is medium and the water erosion hazard is moderate. The wind erosion hazard is high.

Environmental Impacts

Under the Proposed Action or Alternative B, livestock would remove some of the cover of standing vegetation and litter, and compact the soil by trampling. If livestock management were inadequate, these effects could be severe enough to reduce infiltration rates and increase runoff, leading to greater water erosion and soil losses (Moore et al. 1979, Stoddart et al. 1975). Producing forage and protecting the soil from further erosion would

then be more difficult. The greatest impacts of removing vegetation and trampling would be expected in areas of concentrated livestock use, such as trails, waters, feeders, and shade.

Under the Proposed Action or Alternative B, rangeland monitoring would help ensure that adequate vegetation cover is maintained to protect the soil from erosion. The AMP prescribed under Alternative B would address vegetation cover objectives that are aimed at protecting the soil surface.

Under Alternative C, any adverse impact from livestock grazing would be eliminated. However, it is possible that removing grazing animals from an area where they were a natural part of the landscape could result in poor use of precipitation and inefficient mineral cycling (Savory 1988). Bare soil could be sealed by raindrop impact, and vegetation could become decadent, inhibiting new growth. Therefore, the results of no grazing could be similar to those of overgrazing in some respects.

4. Water Quality

Affected Environment - Surface Water

The allotment straddles approximately 1.4 miles of the Pecos River. Eightmile and Railroad Draws drain to the river from the east. This portion of the river is in the reach from Salt Creek to Sumner Dam, which is identified as Segment 2207 by the New Mexico Water Quality Commission (WQCC).

Under the authority of the federal Clean Water Act, the WQCC (1995) designated uses for streams in New Mexico. Designated uses for Segment 2207 include fish culture, irrigation, a limited warmwater fishery, livestock watering, wildlife habitat, and secondary contact (e.g., wading).

The WQCC (1995) also established water quality standards to protect the designated uses, and directs periodic water quality assessments to ensure that standards are met. According to the New Mexico Environment Department (NMED), Segment 2207 is currently meeting the standards for all its designated uses (Hogge 1998, NMED 1998a).

Environmental Impacts - Surface Water

In general, livestock grazing is considered a potential cause of nonpoint source pollution, with sediment as the primary contaminant. Livestock grazing on the allotment, however, is not expected to be significant cause of sediment loading to the Pecos River under any management alternative. The NMED conducted an intensive assessment of Pecos River water quality in 1997. They concluded that no water quality standards have been exceeded in the past ten years on Segment 2207 (NMED 1998a).

The NMED assessment also considered siltation and stream bottom deposits in evaluating impacts to the threatened Pecos bluntnose shiner and its habitat. The NMED cites a letter from the U.S. Fish and Wildlife Service (USFWS) that sediment conditions alone are not

significant contributing factors in the ability of the bluntnose shiner to survive and reproduce. Instead, upriver reservoirs have trapped sediment and resulted in water exiting reservoirs that are “starved of sediment.” Therefore, sediment loading due to livestock grazing on the allotment would not be expected to significantly affect water quality under any alternative.

Bacteria and nutrients are other potential contaminants that can be related to livestock grazing. A review of historic water-quality data did not show any evidence of bacteria contamination of the river, but elevated levels of ammonia were noted during sampling in 1986 (NMED 1998a). The ammonia level was still below the chronic standard for ammonia established by the state. Because no exceedances of water quality standards for the Pecos River have occurred in more than ten years, livestock grazing on the allotment does not appear to have a significant impact on water quality.

Cumulative impacts to Pecos River water quality from grazing on Allotment 65024 would not be expected to be significant. The intensive assessment of the Pecos River by the NMED included Segment 2206 (Salt Creek to Rio Peñasco) immediately downstream of Segment 2207. Potential sources of pollutants in Segments 2206 and 2207 include rangelands, irrigation return flows, dairies, municipal and industrial sources, mineral development, and road construction and maintenance. Still, neither segment had a documented exceedance of any water quality standard.

Affected Environment - Ground Water

The allotment lies at the northern end of the Roswell Basin monitoring area (New Mexico State Engineer 1995, Wilkins and Garcia 1995). Ground water is found in the alluvial aquifer at depths ranging from less than 10 feet near the river, to more than 75 feet in the uplands (Hudson and Borton 1983). Yields of 100 gallons per minute or more are possible from the alluvium (Geohydrology Associates, Inc. 1978). Ground-water quality is generally acceptable for stock use, though data are limited.

Environmental Impacts - Ground Water

The WQCC has the primary responsibility for ground-water quality management in New Mexico. In their most recent report on water quality in New Mexico, the WQCC (1996) did not find livestock grazing on rangelands to be an important potential source of contamination to ground water.

Wilson (1981) also presented potential sources of ground-water contamination and the relative vulnerability of aquifers in New Mexico. He identified animal confinement facilities (e.g., dairies, feedlots) as potential sources of contamination elsewhere in New Mexico, including areas in the Pecos valley downstream from the allotment. Wilson did not identify livestock grazing on rangelands, however, as an important potential source of ground-water contamination.

Livestock grazing would not be expected to have a significant impact on ground-water quality under any management alternative. Livestock would be dispersed over the

allotment, and the soil would filter potential contaminants.

Cumulative impacts to ground-water quality from grazing on Allotment 65024 would be negligible. Grazing impacts would be insignificant when compared to other potential sources of contamination, such as mineral development, saline intrusion, and agriculture.

5. Floodplains

Affected Environment

The properties of any stream or river are due to the interaction of its channel geometry, streamflows, sediment load, channel materials, and valley characteristics (Rosgen 1996). The form and fluvial processes of the Pecos River have been modified by the construction of dams, which have drastically altered the streamflow and sediment regimes of the river. Flooding is less frequent and less severe than under pre-dam conditions, and sediment loads have been greatly reduced (see Figure 1). As a result, the channel has become moderately entrenched, and exhibits much less lateral migration.

Flow regulation with the dams has also changed the extent, character, and condition of the riparian area on the river (Durkin et al. 1994). Sediment deposition on floodplains is important for riparian succession, and seasonal flooding is required for obligate riparian vegetation.

The average floodplain width is about one mile on the allotment, though the allotment never extends to the western edge of the floodplain. The channel exhibits a higher degree of sinuosity on the allotment than other reaches of Pecos River. Channel banks are relatively stable, but are actively being cut in some locations. This is most likely due to entrenchment of the channel and natural processes, rather than disturbance associated

with land use activities. The channel material is primarily a sand/silt bed with small to medium debris. The stream gradient is relatively flat (0.25 percent).

For administrative purposes, the 100-year floodplain serves as the basis for floodplain management on public lands. It is based on Flood Insurance Rate Maps prepared by the

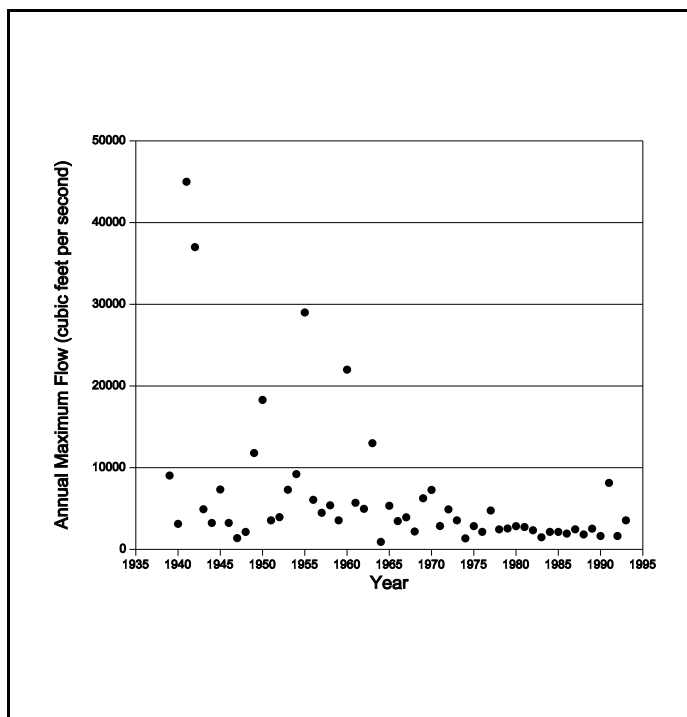


Figure 1. Annual maximum flow at USGS gage at Acme, New Mexico (08386000) for period 1939-1993. In the 25-year period 1939-1963, an annual maximum flow of 8000 cfs was exceeded nine times. In the 30-year period 1964-1993, 8000 cfs was exceeded only once (1991).

Federal Emergency Management Agency (1983). The 100-year floodplain of the Pecos River covers approximately 1380 acres on Allotment 65024, including 890 acres of BLM land and 490 acres of private land. Floodplains are generally absent in the deep draws draining to the river. Current development on the floodplain consists of two-track roads and several miles of fence within the allotment, pipeline right-of-way and ranch buildings.

Environmental Impacts

The reduction in the frequency and magnitude of peak flows on the river would continue to be the primary influence on floodplain function. Whether or not grazing is authorized would have little additional influence.

There would be little change to the level of development on the Pecos floodplain under the Proposed Action or Alternative B. Roads and fences would continue to be used and maintained.

Under the No-Grazing Alternative, some roads could be abandoned and fences removed. Vegetation cover and diversity would probably increase somewhat. Localized impacts, such as cow trails, may revegetate over time.

Livestock grazing under the Proposed Action or Alternative B would not add to cumulative effects to the floodplain beyond the current level of development. The No-Grazing Alternative could slightly improve floodplain function because vegetation cover would increase, and some roads and fences might be removed or abandoned. The expected improvement would not be significant because current impacts are minor compared to all other activities affecting the floodplain (e.g., manipulation of water flows).

6. Riparian/Wetland Areas

Affected Environment

Riparian areas can be found along the 1.4 miles of the Pecos River (a majority on public land) in River Pasture, and along a reach of perennial flow below a spring in Eightmile Draw. The riparian vegetation community is tied to landform and is influenced by flooding intervals. The land form is comprised of exposed and stabilized river bars, the floodplain, and terraces. The river channel is moderately entrenched with gently sloping banks on meander deposition areas and vertical banks on the outside of meanders.

The riparian area is fairly narrow. Riparian vegetation grows abundantly on point bars and shallow banks, and sometimes is found in narrow strips at the base of vertical banks. Flow regulation of the Pecos River has contributed to the entrenchment and lack of lateral movement of the river. The lack of flooding events inhibits riparian plant regeneration, but favors the spread of saltcedar invasion.

Riparian vegetation include Baltic rush, threesquare and cattail. Woody vegetation within the lower floodplain include seepwillow, coyote willow, saltcedar, and Russian olive. Saltcedar, an exotic species introduced for bank protection and flood control throughout the West, has invaded the floodplain and potential riparian areas along the river, growing in patches, strips, or dense thickets. Alkali sacaton, alkali muhly, and inland saltgrass are the most common grass species. Common forb species include goldenrod, ragweed, Douglas rabbitbrush, prairie sunflower, and white sweetclover. Low terraces within the 100-year floodplain support about 15 acres of cottonwood trees with open canopies. Species found on adjacent uplands are also found within the floodplain.

There are no historical spring locations of the allotment based on USGS maps, however, Eightmile Draw does have perennially flowing springs. The spring source itself is not in the allotment. This is a good spring found in a steep draw that runs most of the year, creating moist soil conditions on either side of a county road that intersects Eightmile Draw. Livestock do not congregate in the area for long periods due to the rough terrain and traffic from county road use. OHV use of the draw occurs above the road.

In 1992, the BLM initiated a standard method to assess the functioning condition of riparian areas (BLM 1993). The method uses an interdisciplinary team to consider the interaction of the vegetation, landform/soils, and hydrology. Assessed areas can be classified as "proper functioning condition, functional at risk (upward or downward trend) or nonfunctional."

Riparian areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and

support greater biodiversity. The functioning condition of riparian-wetland areas is a result of an interaction among geology, soil, water, and vegetation (BLM 1993).

In June 1998, a BLM interdisciplinary team assessed the riparian area on the allotment. Ninety percent of the riparian area on public land along the river was in “proper functioning condition” as defined by the BLM (1993). The remaining ten percent (roughly 250 yards) were functioning at risk in an upward trend due to cow trailing, bank sloughing, and reductions in riparian vegetation. The livestock impacts appeared to be minor and likely to respond quickly to management adjustments.

Proper functioning condition was designed to be a quick, qualitative assessment of riparian health. However, it should not be construed as the sole measure of riparian health. Evaluating other resource values, such as watershed condition or wildlife habitat could require more detailed monitoring techniques. For example, quantitative assessments of riparian vegetation and community structure are needed to assess habitat quality for any given wildlife habitat component (e.g., browse condition for mule deer, ground cover for ground-nesting species).

Environmental Impacts

Under the Proposed Action, livestock utilization of the floodplain and associated riparian areas along the Pecos River would continue annually on a seasonal basis. The greatest vegetation impacts would occur at livestock concentration areas such as crossings, shaded areas along the river, and accessible banks and terraces. Some bank sloughing would continue to occur from trampling. Utilization of grass species such as alkali sacaton would be heavy within the floodplain and along the river due to annual use of the area, or when upland pastures do not provide adequate forage. Livestock would then be grazed in River Pasture. Viable spring locations would remain open to livestock grazing impacts.

Under Alternative B, livestock grazing would continue to be used as a tool to improve plant vigor. The floodplain and associated riparian vegetation would be afforded adequate rest. Alleviating annual grazing pressure would improve ground cover and help establish preferred plant species. Reducing exotic species and grazing seasonally along the river would improve the overall health of the floodplain and riparian areas. It is expected that riparian vegetation would improve in the long term.

Under Alternative C, vegetation condition within the floodplain would moderately improve and riparian vegetation would greatly improve. Improvement would continue to be limited by reductions in flood flows and existing exotic species that affect plant composition. Grasses would initially increase, but plant vigor could decline from lack of vegetation removal, making ground cover species rank. Since livestock grazing would not be permitted under Alternative C, range improvement projects such as brush control and exotic species control would be less likely to be implemented through the range program.

7. Wildlife

Affected Environment

The allotment provides a variety of habitat types for terrestrial and aquatic wildlife species. The diversity and abundance of wildlife species in the area is due to the presence of open water, the numerous drainages interconnecting upland habitats to the Pecos floodplain, a mixture of grassland habitat and mixed desert shrub vegetation, and riparian vegetation found within the floodplain of the river.

Numerous avian species use the Pecos River during spring and fall migration, including nongame migratory birds. The Bitter Lake National Wildlife Refuge (BLNWR) is several miles downstream from the allotment, and serves as a major focal point for migratory birds (e.g., ducks, geese, sandhill cranes, waterbirds). Common bird species are mourning dove, mockingbird, white-crowned sparrow, black-throated sparrow, blue grosbeak, northern oriole, western meadowlark, Crissal thrasher, western kingbird, northern flicker, common nighthawk, loggerhead shrike, and roadrunner. Raptors include northern harrier, Swainson's hawk, American kestrel, and occasionally golden eagle and ferruginous hawk.

The Pecos River once supported a wide variety of native fish species adapted to the flow regime that existed prior to dam construction, agriculture development, and the introduction of non-native fish species. The greatest impact to fish habitat is the manipulation of water supply to meet irrigation needs. Representative fish species include the red shiner, sand shiner, Arkansas River shiner, Pecos bluntnose shiner, plains minnow, silvery minnow, plains killifish, mosquitofish, speckled chub, river carpsucker and channel catfish.

Common mammal species using the area include mule deer, pronghorn antelope, coyote, gray fox, bobcat, striped skunk, porcupine, racoon, badger, jackrabbit, cottontail, white-footed mouse, deer mouse, grasshopper mouse, kangaroo rat, spotted ground squirrel, and woodrat.

A variety of herptiles also occur in the area such as yellow mud turtle, box turtle, eastern fence lizard, side-blotched lizard, horned lizard, whiptail, hognose snake, coachwhip, gopher snake, rattlesnake, and spadefoot toad.

Environmental Impacts

Under Alternative A, livestock grazing, if not properly managed, could continue to impact wildlife and habitat diversity by potential overutilization of vegetation that provides forage, browse and cover for a variety of wildlife species.

Under Alternative B, livestock grazing management and range improvement projects designed with consideration for wildlife would generally enhance the quality of wildlife habitat (e.g., spring protection, bottomland rest). Vegetation condition, forage production, and habitat diversity would improve, and wildlife species distribution and abundance would increase. The construction of livestock waters in previously unwatered areas would

promote increased wildlife distribution and abundance, but may potentially increase grazing pressure in those same areas. Short-term impacts of range improvement projects would be the temporary displacement of wildlife species during construction activities.

Under Alternative C, there would no longer be direct competition between livestock and wildlife for forage, browse and cover. Wildlife habitat would moderately improve. The limitation for improvement would continue to be the existing invading species component (e.g., mesquite, snakeweed) affecting plant composition. Since livestock grazing would not be permitted, range improvement projects that benefit wildlife, such as water developments, would be abandoned. New range improvement projects that would also benefit wildlife habitat, such as brush control, may not be implemented because these projects are primarily driven and funded through range improvement efforts.

8. Threatened and Endangered Species

The Pecos bluntnose shiner, Pecos gambusia and interior least tern are federally listed species that occur or have the potential to occur on the allotment. Federally proposed species include the Pecos pupfish and Pecos sunflower. The status and presence of these species in the RFO area are discussed in the following section.

Pecos Bluntnose Shiner (*Notropis simus pecosensis*) - Federal Threatened

Affected Environment

Historically, the Pecos bluntnose shiner inhabited the river from Santa Rosa to near Carlsbad, New Mexico. Currently, the subspecies is restricted to the river from the Fort Sumner area southward locally to the vicinity of Artesia, and seasonally in Brantley Reservoir (NMDGF 1988; USFWS 1992). Routine fish community monitoring conducted by the USFWS in the river between Sumner Dam and Brantley Reservoir show the fish remains generally abundant, especially in light of cooperative efforts between the Bureau of Reclamation and the USFWS to more closely mimic natural flows in the Pecos River.

There are two designated critical habitat areas on the Pecos River within the RFO area. The first is a 64-mile reach beginning about ten miles south of Fort Sumner (Township 1 North), downstream to a point about twelve miles south of the DeBaca/Chaves County line (Township 5 South). The allotment falls within, and is located at the terminus of this reach. The second reach is from Highway 31 east of Hagerman (Township 14 South), south to Highway 82 east of Artesia (Township 17 South).

The primary threat to the Pecos bluntnose shiner appears to be the manipulation of flows in the Pecos River to meet irrigation needs, and the subsequent drying of the river channel (Hatch et al. 1985). High flows in the late winter-early spring before natural spring runoff appear to displace fish into marginal downstream habitats (including Brantley Reservoir). Cessation of reservoir releases after spring runoff and before the advent of summer rains desiccates long stretches of the Pecos River. Maintenance of water levels within the Pecos River and its tributaries is beyond the management authority of the BLM.

In addition to the manipulation of flows is the threat posed by non-native fish. The introduction and establishment of species such as the Arkansas River shiner offers direct competition with the Pecos bluntnose shiner.

Livestock grazing does not appear to be a threat to the bluntnose shiner based on a review of the literature. Nor was grazing identified in the *Pecos Bluntnose Shiner Recovery Plan* as having the potential to adversely affect water quality, and thus the bluntnose shiner (USFWS 1992).

Environmental Impacts

Under the Proposed Action or Alternative B, livestock grazing impacts to the Pecos bluntnose shiner would be negligible. Under Alternative C no impacts from livestock grazing would occur. Based on the assessment of Pecos River water quality conducted by the NMED in 1997, it appears that the shiner would not be affected by poor water quality if a grazing permit were issued.

Section 303(d) of the federal Clean Water Act requires that the State identify those waters for which existing required pollution controls are not stringent enough to meet State water quality control standards. The State must then establish total maximum daily loads (TMDLs) for pollutants of these water-quality-limited stream segments.³ The presence of critical habitat for the threatened Pecos bluntnose shiner raised the Pecos River to a priority one on the New Mexico 303(d) ranking system.

Segment 2207 (Pecos River from Salt Creek to Sumner Dam) had been listed for stream bottom deposits. Based on a review of historical data and their survey, however, the NMED (1998a) concluded there was no basis for conducting TMDLs on Segment 2207. The NMED (1998b) removed the segment of the Pecos River from the 1998-2000 303(d) list.

NMED's decision to remove Segment 2207 from the 303(d) list bears directly on the Biological Opinion rendered by the USFWS on the Roswell Resource Management Plan. The USFWS cited the New Mexico Water Quality Control Commission's 305(b) report in their opinion. The report identified siltation, reduction of riparian vegetation, and streambank destabilization as among the probable causes for the Pecos River in the RFO area not supporting its designated use as a warm water fishery, and identified rangeland agriculture as a probable source of the nonsupport. Just as Segment 2207 was removed from the 303(d), the next 305(b) report will no longer list the segment as water quality-limited (Hogge 1998).

Pecos *Gambusia* (*Gambusia nobilis*) - Federal Endangered

³ The TMDL is defined as "the greatest loading or amount of the pollutant that may be introduced into a watercourse or stream reach from all sources without resulting in a violation of water quality standards."

Affected Environment

The Pecos gambusia is endemic to the Pecos River Basin in southeastern New Mexico and western Texas. Historically, the species occurred as far north as the Pecos River near Fort Sumner, and south to Fort Stockton, Texas.

Recent records indicate, however, that its native range is restricted to sinkholes and springs and their outflows on the west side of the Pecos River in Chaves County. In spite of population declines, the species remains locally common in a few areas of suitable habitat. Populations on the BLNWR and the Salt Creek Wilderness Area constitute the key habitat of the species in the RFO area. On the refuge, the gambusia is primarily restricted to springs and sinkholes in the Lake St. Francis Research Natural Area.

Endangerment factors include the loss or alteration of habitat (e.g., periodic dewatering) and introduction of exotic fish species (e.g., mosquitofish). Potential impacts to habitat may also occur from surface disturbing activities at sinkholes or springs and their outflows.

Environmental Impacts

There would be no negative impacts to the Pecos gambusia from livestock grazing under any Alternative. No springs capable of providing yearlong habitat for the gambusia exist on BLM land within the allotment.

Interior Least Tern (*Sterna antillarum athalassos*) - Federal Endangered

Affected Environment

The interior least tern nests on shorelines and sandbars of streams, rivers, lakes, and man-made water impoundments. Records of breeding terns in New Mexico are centered around BLNWR where the species has bred regularly since it was first recorded in 1949. BLNWR is considered "essential" tern breeding habitat in the state. Besides BLNWR, the only known nesting habitat in the RFO area is an alkali flat due north of the refuge on public lands. These are small populations with only a few nesting terns.

Sporadic observations of least terns have been recorded elsewhere in the Pecos River valley. The tern may occur on public lands in Chaves County along the river because suitable nesting habitat is found on sites that are sandy and relatively free of vegetation (i.e., alkali flats). Approximately 44 potential nesting sites are found throughout the RFO area. Other potential habitat sites are saline, alkaline, or gypsiferous playas that occasionally hold water. However, ephemeral playas do not support fish, the main staple for terns.

Specific surveys for nesting least terns have been conducted in potential habitat along the Pecos River and playas by the New Mexico Natural Heritage Program under a Challenge Cost Share project. No other nesting terns have been found to date.

Environmental Impacts

There would be no impacts to the Interior least tern under any Alternative. Recent habitat surveys found no breeding populations in potential nesting habitat that occurs as sand bars within the river channel.

Pecos Pupfish (*Cyprinodon pecosensis*) - Federal Proposed

Affected Environment

The Pecos pupfish is found in a variety of habitats from saline springs and gypsum sinkholes to desert streams with highly fluctuating conditions. Pecos pupfish populations are most dense in the gypsum sinkholes on BLNWR. The species apparently thrives in these saline waters that support few other fish species. It occasionally occupies fresher waters in the Pecos River, but is uncommon in such habitats. In the river, this pupfish is most often found in backwater areas and side pools that lack sunfish or other predators (NMDGF 1988; Sublette et al. 1990; NMDGF 1997). The pupfish also inhabits the Overflow Wetlands Wildlife Habitat Area adjacent to the Bottomless Lakes State Park.

Endangerment factors include habitat loss caused by groundwater pumping and channel alterations, hybridization and/or replacement by the sheepshead minnow, and predation by non-native fish species. Potential impacts to habitat may occur from surface disturbing activities at or near springs or seeps. Other activities that severely impact habitat are not within the purview of the BLM, such as transportation and utilization of water associated with agricultural irrigation. Livestock grazing may impact springs or seeps but most of these sites have been protected with exclosures.

Environmental Impacts

Under the Proposed Action or Alternative B, livestock grazing impacts to the Pecos pupfish would be negligible. Under Alternative C no impacts from livestock grazing would occur. The conclusions regarding riverine habitat are based on the same information used for the Pecos bluntnose shiner. Suitable sinkhole or spring habitat does not exist on the allotment.

Pecos (Puzzle) Sunflower (*Helianthus paradoxus*) - Federal Proposed

Affected Environment

The Pecos sunflower is found along alkaline seeps and cienegas of semi-desert grasslands and short-grass plains (4,000-7,500 ft.). Plant populations are found both in water and where the water table is near the ground surface.

In the RFO area, the sunflower is found in only a few areas outside of the BLNWR. In 1994, a new population was found growing on the margins of Lea Lake and its outflow at Bottomless Lakes State Park. Lloyd's Draw, east of the Pecos River, has the only known Pecos sunflower population on BLM land, which only became evident following a

prescribed fire. Potential habitat also occurs on BLM land within the Overflow Wetlands Wildlife Habitat Area.

No Pecos sunflower populations have been found on the allotment to date. Endangerment factors include dewatering of riparian or wetland areas where the sunflower is found, surface disturbing activities, and excessive livestock grazing. Potential habitat for the sunflower occurs on the allotment as low lying areas where the water table is near the ground surface. The low lying areas are not necessarily along the existing river channel, but in old channel courses and oxbows. These areas are now invaded by saltcedar growing in dense stands, which may prevent the viability of the Pecos sunflower. Other potential sites include a few springs on the east side of the river.

Environmental Impacts

Under the Proposed Action and Alternative C, potential habitat would remain in unsuitable condition for the Pecos sunflower due to saltcedar. Under Alternative B, livestock grazing management and associated habitat improvement projects, including spring protection and enhancement, would increase potential habitat for the sunflower. Populations of the sunflower may become established following saltcedar control in certain areas, if seeds are available in the soil.

9. Visual Resources Management

Affected Environment

The entire allotment is in a Class III area for visual resources management. In a Class III area, contrasts to the basic elements caused by a management activity may be evident and begin to attract attention in the landscape. The changes, however, should remain subordinate to the existing landscape.

Environmental Impacts

The basic elements of the landscape would not change within the allotment under any management alternative. Potential impacts to visual resources would be analyzed and mitigated as allotment management activities are proposed in the future.

10. Recreation

Affected Environment

A network of roads provide access to public, private, and state lands within the allotment, although legal public access is limited. Access to most of the private and state lands is not currently controlled by fences, locked gates, or no trespass signs. The BLM has designated off-highway vehicle use on public lands in the area as limited to existing roads and trails.

The allotment provides habitat for numerous game species including desert mule deer, pronghorn antelope, mourning dove and scaled quail. Predator and feral pig hunting may occur on the allotment, as well as trapping for predators or furbearers. The river is also accessible to the public for fishing or minnow seining.

General sightseeing, wildlife viewing and photography are nonconsumptive recreational activities that may occur. Rock collectors find various minerals unique to the area, such as Pecos diamonds.

Environmental Impacts

Under the Proposed Action and Alternative B, there would be no direct negative impacts to recreational activities on public lands. There could be potential conflicts between recreationists and ranching activities, depending on hunting seasons and livestock use in a given pasture. Vandals could damage range improvements.

Under Alternative B, game and non-game wildlife species could realize long-term benefits through the improvement of habitat. It is expected that hunter success and wildlife viewing opportunities would be enhanced.

Under Alternative C, no conflicts between ranching activities and recreational use would occur on public lands. Success of hunts and nonconsumptive opportunities would remain the same or slightly improve. Vandalism could still occur to range improvements.

11. Cave and Karst

Affected Environment

This allotment is located within a designated area of medium Cave or Karst Potential. A complete significant cave or karst inventory has not been completed for the public lands located in this grazing allotment. Presently, no known significant caves or karst features have been identified within this allotment.

Environmental Impacts

Since no caves or major karst features have been identified on this grazing allotment, grazing would not affect these resources. If a significant cave or karst feature were discovered on public lands within this allotment, that cave or feature may be fenced to exclude livestock and off-highway vehicle use.

12. Air Quality

Affected Environment

The allotment is in a Class II area for the Prevention of Significant Deterioration of air quality as defined by the federal Clean Air Act. Class II areas allow a moderate amount of air quality degradation.

Air quality in the region is generally good, with winds averaging 10-16 miles per hour depending on the season. Peak velocities reach more than 50 miles per hour in the spring. These conditions rapidly disperse air pollutants in the region.

Environmental Impacts

Dust levels resulting from allotment management activities would be slightly higher under the Proposed Action or Alternative B than Alternative C. The cumulative impact on air quality from the allotment would be negligible compared to all pollution sources in the region.

IV. CUMULATIVE IMPACTS

A cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

The analysis of cumulative impacts is driven by major resource issues. The action considered in this environmental assessment (EA) is the authorization of livestock grazing on Allotment 65024, and the major issues include:

- (1) threatened and endangered species associated with the Pecos River, primarily the Pecos bluntnose shiner,
- (2) Pecos River water quality, and
- (3) riparian/wetland habitat within the Pecos River floodplain.

The incremental impact of issuing a grazing permit on these resources must be analyzed in the context of impacts from other actions. Other BLM actions that could have impacts on the identified resources include: livestock authorization on other allotments along the Pecos River; oil and gas activities on the river floodplain and on the uplands; rights-of way crossing the river; and recreation use, particularly off-highway vehicles.

All authorized activities which occur on BLM land can also take place on state and private lands. In addition, significant impacts could result from reservoir management and the manipulation of river flows, and agricultural activities (e.g. dairies, crop production, and irrigation diversions and return flows).

Many of the actions which could contribute to cumulative impacts have occurred over many years. Impacts from open-range livestock grazing in the last century are still being addressed today. Sumner Dam, the principal structure controlling river flows in this reach, was built in 1937. Major irrigation projects were begun in the 19th century, and oil and gas activities began in the early part of the 20th century. All these activities are still occurring today, and are expected to continue into the foreseeable future to some degree.

The Proposed Action or Alternative B would not add incrementally to the cumulative impacts to threatened and endangered species, or to Pecos River water quality. The conclusion that impacts to these resources from grazing authorization would not be significant are discussed in detail in Section III of the EA. Incremental impacts to riparian/wetland habitat from livestock grazing are possible, however. Under Alternative

B, negative incremental impacts would be expected to be less than under the Proposed Action because the allotment would be more intensively managed. These impacts are also discussed in Section III of the EA.

If the No-Grazing Alternative were chosen, some adverse cumulative impacts to riparian/wetland habitat would be eliminated, but others would occur. Grazing would no longer be available as a vegetation management tool, and BLM lands within the allotment would be less intensively managed. For example, alkali sacaton in the bottomlands would likely become decadent without livestock impact, and control of exotic plant species such as saltcedar would be less likely without allotment management.

V. MITIGATION MEASURES

Vegetation monitoring studies will continue if a new grazing permit were issued under the Proposed Action or Alternative B. Changes to livestock management would be made if monitoring data showed adverse impacts to the vegetation.

If new information surfaces that livestock grazing is negatively impacting other resources, action will be taken at that time to mitigate those impacts.

VI. RESIDUAL IMPACTS

Residual impacts are direct, indirect, or cumulative impacts that would remain after applying the mitigation measures. Residual impacts following authorization of livestock grazing would be insignificant if the mitigation measures are properly applied.

VII. FUNDAMENTALS OF RANGELAND HEALTH

The fundamentals of rangeland health are identified in 43 CFR §§4180.1 and pertain to watershed function, ecological processes, water quality and habitat for threatened and endangered (T&E) species and other special status species. Based on the available data and professional judgment, the evaluation by this environmental assessment indicates that the conditions identified in the fundamentals of rangeland health exists on the allotment.

VIII. BLM TEAM MEMBERS

Dan Baggao, Jim Schroeder, John Spain, Joe Torrez, Irene Gonzales-Salas, Jerry Dutchover, Rand French, Pat Flannery, Tim Kreager and Howard Parman.

IX. PERSONS AND AGENCIES CONSULTED

Chaves County Public Land Use Advisory Committee

Willard and Nancy Moody - Permittee

New Mexico Department of Game and Fish

New Mexico Energy, Minerals, and Natural Resources Department
- Forestry and Resource Conservation Division

New Mexico Environment Department - Surface Water Quality Bureau

New Mexico State Land Office

U.S. Fish and Wildlife Service - Ecological Services

U.S. Fish and Wildlife Service - Fishery Resources Office

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FINDING OF NO SIGNIFICANT IMPACT AND RATIONALE

EA No. NM-060-99-079

Finding of No Significant Impact:

I have reviewed this environmental assessment for Allotment 65024, including the explanation and resolution of any potentially significant environmental impacts. I have determined that the proposed action and alternatives will not have significant impacts on the human environment, and that preparation of an Environmental Impact Statement (EIS) is not required.

Rationale for Recommendations:

The proposed action and alternatives would not result in any undue or unnecessary environmental degradation. The proposed action will be in compliance with the Roswell Approved Resource Management Plan and Record of Decision (October 1997).

T.R. Kreager
Acting Assistant Field Office Manager - Resources

Date